IN THE SPECIFICATION

Please amend the paragraphs of the specification as follows:

On page 1, paragraph 1002:

Communication systems have been developed to allow transmission of information signals from an origination station to a physically distinct destination station. In transmitting an information signal from the origination station over a communication channel, the information signal is first converted into a form suitable for efficient transmission over the communication channel. Conversion, or modulation, of the information signal involves varying a parameter of a carrier wave in accordance with the information signal in such a way that the spectrum of the resulting modulated carrier wave is confined within the communication channel bandwidth. At the destination station the original information signal is reconstructed from the modulated carrier wave received over the communication channel. In general, such a reconstruction is achieved by using an inverse of the modulation process employed by the origination station.

On page 1, paragraph 1003:

Modulation also facilitates ~~multiple-access~~ multiple access, i.e., simultaneous transmission and/or reception, of several signals over a common communication channel. ~~Multiple-access~~ Multiple access communication systems often include a plurality of remote subscriber units requiring intermittent service of relatively short duration rather than continuous access to the common communication channel. Several multiple-access techniques are known in the art, such as Time Division Multiple Access (TDMA) and Frequency Division Multiple Access (FDMA). Another type of ~~multiple-access~~ multiple access technique is a Code Division Multiple Access (CDMA) spread spectrum system that conforms to the "TIA/EIA/IS-95 Mobile Station-Base Station Compatibility Standard for Dual-Mode Wide-Band Spread Spectrum Cellular System," hereinafter referred to as the IS-95 standard. The use of CDMA techniques in a multiple access communication system is disclosed in U.S. Patent No. 4,901,307, entitled "SPREAD SPECTRUM MULTIPLE-ACCESS COMMUNICATION SYSTEM USING SATELLITE OR TERRESTRIAL REPEATERS," and U.S. Patent No. 5,103,459, entitled

"SYSTEM AND METHOD FOR GENERATING WAVEFORMS IN A CDMA CELLULAR TELEPHONE SYSTEM," both assigned to the assignee of the present invention.

On page 2, paragraph 1004:

A ~~multiple-access~~ multiple access communication system may be a wireless or wire-line and may carry voice and/or data. An example of a communication system carrying both voice and data is a system in accordance with the IS-95 standard, which specifies transmitting voice and data over the communication channel. A method for transmitting data in code channel frames of fixed size is described in detail in U.S. Patent No. 5,504,773, entitled "METHOD AND APPARATUS FOR THE FORMATTING OF DATA FOR TRANSMISSION", assigned to the assignee of the present invention. In accordance with the IS-95 standard, the data or voice is partitioned into code channel frames that are 20 milliseconds wide with data rates as high as 14.4 ~~Kbps~~ kbps. Additional examples of a communication systems carrying both voice and data comprise communication systems conforming to the "3rd Generation Partnership Project" (3GPP), embodied in a set of documents including Document Nos. 3G TS 25.211, 3G TS 25.212, 3G TS 25.213, and 3G TS 25.214 (the W-CDMA standard), or "TR-45.5 Physical Layer Standard for cdma2000 Spread Spectrum Systems" (the IS-2000 standard).

On page 2, paragraph 1005:

In a ~~multiple-access~~ multiple access communication system, communications between users are conducted through one or more base stations. A first user on one subscriber station communicates to a second user on a second subscriber station by transmitting data on a reverse link to a base station. The base station receives the data and can route the data to another base station. The data is transmitted on a forward link of the same base station, or the other base station, to the second subscriber station. The forward link refers to transmission from a base station to a subscriber station and the reverse link refers to transmission from a subscriber station to a base station. Likewise, the communication can be conducted between a first user on one mobile subscriber station and a second user on a landline station. A base station receives the data from the user on a reverse link, and routes the data through a Public Switched Telephone

Network (PSTN) to the second user. In many communication systems, e.g., IS-95, W-CDMA, IS-2000, the forward link and the reverse link are allocated separate frequencies.

On page 3, paragraph 1006:

An example of a data only communication system is a High Data Rate (HDR) communication system that conforms to the TIA/EIA/IS-856 industry standard, hereinafter referred to as the IS-856 standard. This HDR system is based on a communication system disclosed in co-pending application serial number 08/963,386, entitled "METHOD AND APPARATUS FOR HIGH RATE PACKET DATA TRANSMISSION," filed 11/3/1997, now U.S. Patent No. 6,574,211, issued June 3, 2003 to Padovani et al., assigned to the assignee of the present invention. The HDR communication system defines a set of data rates, ranging from 38.4 kbps to 2.4 Mbps, at which an access point ~~Access Point~~ (AP) may send data to a subscriber station (access terminal ~~Access Terminal~~, AT). Because the AP is analogous to a base station, the terminology with respect to cells and sectors is the same as with respect to voice systems.

On page 6, paragraph 1014:

In one aspect of the invention, the above-stated needs are addressed by determining at a source of data a quality metric of a link over which data is to be transmitted and modifying said quality metric by a quality metric margin. The maximum rate of data is then determined in accordance with said modified quality metric. Alternatively, power required for transmission of [[a]] data at a rate of data is determined in accordance with said modified quality metric and a rate of the data.

On page 6, paragraph 1016:

In another aspect of the invention, the outage is detected by determining at a source of data a quality metric of a link over which data is to be transmitted; modifying said quality metric by a quality metric margin; and declaring an outage event when power required for transmission of a reference signal exceeds power required for transmission of the reference signal determined form the modified quality metric. Alternatively, the outage is ~~dedected~~ detected by determining at a source of data a quality metric of a link over which data is to be transmitted; modifying said quality metric by a quality metric margin; determining a maximum rate of data in accordance

with said modified quality metric; and declaring an outage event when power required for transmission of data at the maximum rate of data exceeds maximum allowable transmission power.

On page 7, paragraph 1019:

FIG. 3 illustrates a ~~conceptual arrangement of~~ reverse link transmission power control;

On page 7, paragraph 1020:

FIG. 4 illustrates ~~a conceptual diagram of~~ a reverse link quality estimator;

On page 7, paragraph 1023:

FIG. 7 illustrates ~~a conceptual diagram of~~ a predictor;

On page 7, paragraph 1024:

FIG. 8 illustrates ~~a conceptual operation of~~ a peak filter;

On page 7, paragraph 1026:

FIG. 10 illustrates ~~a conceptual~~ arrangement of another embodiment of reverse link maximum admissible data rate estimation; and

On page 11, paragraph 1042:

The data to be transmitted to the AT **104** ~~arrive~~ arrives at the controller **110**. In accordance with one embodiment, the controller **110** sends the data to all APs in AT **104** active set over the backhaul **112**. In another embodiment, the controller **110** first determines, which AP was selected by the AT **104** as the serving AP, and then sends the data to the serving AP. The data [[are]] is stored in a queue at the AP(s). A paging message is then sent by one or more APs

to the AT **104** on respective control channels. The AT **104** demodulates and decodes the signals on one or more control channels to obtain the paging messages.

On page 11, paragraph 1043:

At each [[time]] time-slot, the AP can schedule data transmission to any of the ATs that received the paging message. An exemplary method for scheduling transmission is described in U.S. Patent No. 6,229,795, entitled "SYSTEM FOR ALLOCATING RESOURCES IN A COMMUNICATION SYSTEM," assigned to the assignee of the present invention. The AP uses the rate control information received from each AT in the DRC message to efficiently transmit forward link data at the highest possible rate. In one embodiment, the AP determines the data rate at which to transmit the data to the AT **104** based on the most recent value of the DRC message received from the AT **104**. Additionally, the AP uniquely identifies a transmission to the AT **104** by using a spreading code which is unique to that mobile station. In the exemplary embodiment, this spreading code is the long pseudo noise (PN) code, which is defined by the IS-856 standard.

On page 12, paragraph 1045:

One skilled in the art recognizes that an AP can comprise one or more sectors. In the description above, the term AP was used generically to allow clear explanation of basic concepts of the HDR communication system. However, one skilled in the art can extend the explained concepts to an AP comprising any number of sectors. Consequently, the concept of sector will be used throughout the rest of the document.

On page 14, paragraph 1048:

Referring back to **FIG. 3**, the function of the closed loop is to correct the open loop estimate, which does not take into account environmentally induced phenomena, such as shadowing, and other user interferences, to achieve a desired signal quality at the base station. In

one embodiment, the desired signal quality comprises a signal-to-noise ratio (SNR). The objective can be achieved by measuring the quality metric of a reverse link and reporting results of the measurement back to the subscriber station. In one embodiment, the base station measures a reference signal transmitted over the reverse link, and provides feedback to the subscriber station. The subscriber station ~~adjust~~ adjusts the reverse link transmission power in accordance with the feedback signal. In one embodiment, the reference signal comprises a pilot SNR, and the feedback comprises the RPC commands, which are summed in a summer **304** and scaled to obtain the required closed loop transmit power (TxClosedLoopAdj). Like the open loop, the closed loop is well known in the art and other known embodiments are equally applicable, as recognized by one of ordinary [[skills]] skill in the art.

On page 15, paragraph 1052:

FIG. 6 illustrates a conceptual arrangement of reverse link maximum admissible rate of data estimation. The open loop generates an estimate of the reverse link quality metric in block **602**. In one embodiment, the quality metric is a path loss. The estimated path loss is then translated into a required transmit power TxOpenLoopPwr in accordance with other factors, e.g., a base station loading. In one embodiment, the TxOpenLoopPwr is estimated in accordance with **FIG. 4**. The TxOpenLoopPwr is provided to a block **604**, which may predict the value of TxOpenLoopPwr at some time in the future. The predicted output of ~~the predicted~~ block 604 is denoted TxOpenLoopPred. In one embodiment, the block **604** is an identity function; consequently, the TxOpenLoopPwr is unaffected by the block **604**, therefore, TxOpenLoopPred = TxOpenLoopPwr. Another embodiment of the block **604** is illustrated in **FIG. 7**.

On page 20, paragraph 1059:

As discussed, the reverse link channel comprises the Physical Layer Channels transmitted from the AT to the access network. **FIG. 9** illustrates an exemplary reverse link waveform **900**. For pedagogical reasons, the waveform **900** is modeled after a reverse link waveform of the above-mentioned system in accordance to IS-856 standard. However, one of ordinary skill in the

art will understand that the teaching is applicable to different waveforms. The reverse link channel **900** is defined in terms of frames **902**. A frame **902** is a structure comprising 16 time-slots **904(n)**, each time-slot **904(n)** being 2048 chips long, corresponding to a 1.66[[.]] ms. time-slot duration, and, consequently, a 26.66[[.]] ms. frame duration.

On page 20, paragraph 1060:

In accordance with the IS-856 standard, the rate of data can change only at a frame boundary. In general, the value of rlRatePredicted will be determined several slots before the start of a frame, in order to arrive at the rate of data to be transmitted during that frame on the reverse link. Suppose the value of rlRatePredicted is determined at time t_0, k slots ($k > 0$) before the start of a frame **902(m)**in accordance with the above-described embodiment. At the start of the frame **902(m)**, the AT evaluates the transmit power requirement for the determined rlRatePredicted in accordance with the open loop and closed loop power control, and begins transmitting the data. During the frame duration, the transmit power is adjusted in accordance with an update of the open loop and closed loop power control. Consequently, the actual transmit power may differ from the transmit power TxTotalPowerUpperBound, corresponding to the determined rlRatePredicted. To evaluate the performance of the maximum admissible data rate estimation, the concept of outage can be utilized.

On page 20, paragraph 1061:

The n^{th} slot the **902(m^{th})** frame is defined to be in outage of Type A if the power required for the rlRatePredicted at the n^{th} slot is greater than the power determined for the rlRatePredicted at time t_0, i.e., if [[an]] Equation (5) is satisfied:

$$\mathrm{TxOpenLoop}[16m+n]+\mathrm{TxClosedLoop}[16m+n]+\mathrm{PilotToTotalRatio}(\mathrm{rlRatePredicted}[16m-k])>\mathrm{TxMaxPwr} \quad (5)$$

If the nth slot of the **902(m^{th})** frame is not in outage of Type A, then from Equations (4) and (5) follows:

$$\text{TxPilotPred}[16m+n] + \text{PilotToTotaRatiol}(\text{rlRatePredicted}[16m-k]) \leq \text{xPwrMargin} \quad (6)$$

On page 21, paragraph 1062:

The n^{th} slot of the **902(m^{th})** frame is defined to be in outage of Type B if the power required for the rlRatePredicted at the n^{th} slot is greater than the power determined for the rlRatePredicted at time t_0, i.e., if [[an]] Equation (7) is satisfied:

$$\text{TxPilotUpperBound}[16m + n] > \text{TxPilotUpperBound}[16m - k],\ n = 0, 1, \ldots, 15 \quad (7)$$

If the n^{th} slot of the **902(m^{th})** frame is not in outage of Type B, then from Equations (4) and (7) follows:

$$\text{TxPilotPred}[16m+n] + \text{PilotToTotalRatio}(\text{rlRatePredicted}[16m-k]) \leq \text{TxMaxPwr} \quad (8)$$

On page 21, paragraph 1063:

Equations (6) and (8) [[shows]] <u>show</u> that if the value of rlRatePredicted determined at time t_0 is used for transmitting the data over the next frame **902(m+1)**, then the reverse link is not power-limited during the n^{th} slot of the frame **902(m+1).**

On page 21, paragraph 1064:

It has been discovered, that due to various methods for mitigating changing channel conditions, e.g., error correction, interleaving and other methods known to one of ordinary skill in the art, isolated slot outages in a frame do not result in packet decoding errors, however too many slot outages in one frame result in packet decoding errors. A design goal of a communication system is to limit the slot outage probability, to guarantee minimal performance degradation due to packet errors, while maximizing reverse link throughput under all channel conditions. From Equations (3), (4), (6) and (8)<u>,</u> [[that]] increasing TxPwrMargin may reduce

outage probability, while reducing TxPwrMargin increases the predicted reverse link data rate. In other words, a large value of TxPwrMargin provides a conservative estimate of the predicted reverse link data rate, resulting in lower user throughput and possibly, diminished reverse link capacity. Therefore, in another embodiment, the value of TxPwrMargin is dynamically adjusted in accordance with changing channel conditions in order to maintain outage probability at the desired value.

On page 22, paragraph 1065:

In one embodiment, [[of]] dynamically adjusting the TxPwrMargin, involves evaluating an occurrence of an outage ~~is evaluated~~ for each slot of the frame **902(m+1)**. If a slot outage occurs, the TxPwrMargin is incremented by PwrMarginUpStep; otherwise, the TxPwrMargin is decremented by PwrMarginDownStep. In one embodiment, the ~~TxPwrMarginUpStep~~ PwrMarginUpStep = 0.5 dB, the ~~TxPwrMarginDownStep~~ PwrMarginUpStep = 0.05 dB. The value of TxPwrMargin is further limited between TxPwrMarginMin and TxPwrMarginMax. In one embodiment, the TxPwrMarginMin = 0 dB and TxPwrMarginMax = 6 dB

On page 23, paragraph 1070:

In another embodiment of the ratchet mode, if rlRatePredicted equals rlRateMaxAllowable, and a slot outage does not occur, then TxPwrMargin is not changed from the current value. If a slot outage occurs, the TxPwrMargin is incremented by a PwrMarginUpStep. If rlRatePredicted equals rlRateMinAllowable, and a slot outage occurs, TxPwrMargin is not changed from the current value. If a slot outage does not occur, the TxPwrMargin is decremented by a PwrMarginDownStep.

On page 24, paragraph 1072:

Those of ordinary skill in the art will recognize that although the various embodiments were described in terms of power control being performed by both an open loop and a closed loop, such was done for pedagogical purposes only. Clearly, any mechanism that allows an AT

to estimate a quality metric of a reverse link over which the AT transmits data is sufficient. Therefore, should an AT use only an open loop, or only a closed loop, the embodiments would be equally applicable. Thus, referring to **FIG. 6**, if only an open loop were implemented, (i.e., blocks **606** and **608** were deleted) form **FIG. 6**, the embodiments are valid, realizing that:

TxOpenLoopPwr = ~~TxPilotlPwr~~ TxPilotPwr (11)

On page 24, paragraph 1073:

Furthermore, in a specific case, when [[a]] path loss changes slowly the embodiment described in reference to **FIG. 6** can be further simplified as illustrated in **FIG. 10**, where the function of blocks **1002**, **1006**, **1008**, **1010**, and **1012** is the same as function of blocks **602**, **606**, **608**, **610**, and **612**. One of ordinary skill in the art will recognize[[s]] that moving the block **1012** to the closed loop branch [[did]] does not change determination of TxPilotPredUpperBound because Equation (3) holds.

On page 25, paragraph 1078:

The steps of a method or algorithm described in connection with the embodiments disclosed herein may be embodied directly in hardware, in a software module executed by a processor, or in a combination of the two. A software module may reside in RAM memory, flash memory, ROM memory, EPROM memory, EEPROM memory, registers, hard disk, a removable disk, a CD-ROM, or any other form of storage medium known in the art. An exemplary storage medium is coupled to the processor such that the processor can read information from, and write information to, the storage medium. In the alternative, the storage medium may be integral to the processor. The processor and the storage medium may reside in an ASIC. The ASIC may reside in a user terminal. In the alternative, the processor and the storage medium may reside as discrete components in a user terminal.